

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number
WO 2004/057455 A3

(51) International Patent Classification⁷: **G06F 3/06**, 1/32

(21) International Application Number:
PCT/IB2003/005698

(22) International Filing Date: 3 December 2003 (03.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02080521.4 20 December 2002 (20.12.2002) EP

(71) Applicant (*for all designated States except US*): **KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]**; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **VAN GASSEL,**

Jozef, P. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **WIJNANDS, Rudi, J., M. [NL/NL]**; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **KORST, Johannes H., M. [NL/NL]**; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

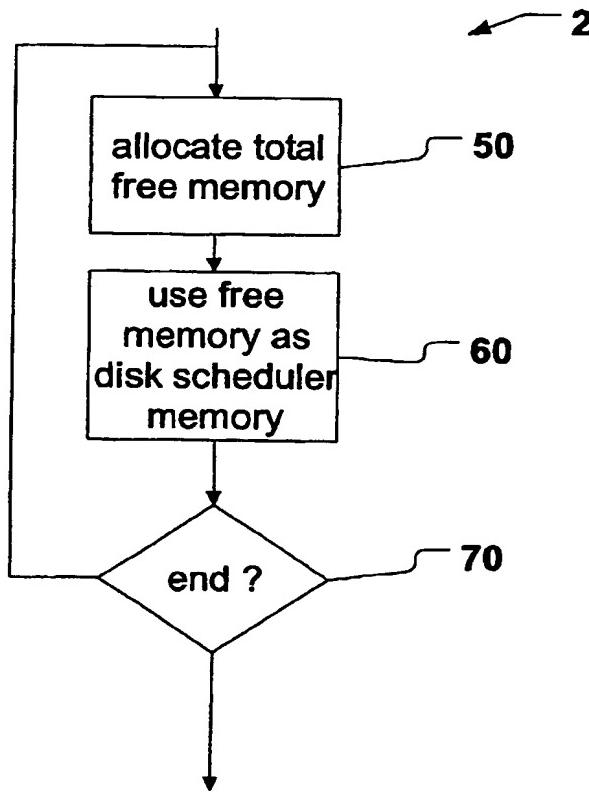
(74) Agent: **GROENENDAAL, Antonius, W., M.; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).**

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: POWER SAVING METHOD FOR PORTABLE STREAMING DEVICES



(57) Abstract: A method (2) of controlling memory usage in a portable streaming device (100), a portable streaming device (100) and a computer readable medium (110). The portable streaming device (100) comprises at least one memory (102), at least one processing unit (101), and at least one storage device (103) being operatively connected with said memory (102) under control of said processing unit (101). The size of a disk scheduler buffer memory within said memory in said portable streaming device is adaptively maximised by said method (2) at all times. Free memory available within the portable streaming device is continuously allocated (50) and at least a portion of said allocated free memory is designated as disk scheduler buffer memory (60). Thus results improved solid state memory utilisation of the portable streaming device, and due to larger available disk buffer memory size, less start-stop-cycles of the storage device are initiated, which leads to a longer life-cycle of said portable streaming device.



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Declaration under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY,*

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:

19 May 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

IB 03/05698

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 G06F3/06 G06F1/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 G06F G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/045961 A1 (GIBBS ERIC PAUL ET AL) 18 April 2002 (2002-04-18) paragraphs '0011!, '0012!, '0017!, '0018!, '0024!, '0032!, '0050! figures 1,4-9 -----	1-18
A	US 5 953 746 A (CROCKER ET AL) 14 September 1999 (1999-09-14) column 2, lines 57-65 column 3, lines 65,66 figure 2 ----- -/-	1

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *M* document relating to an oral disclosure, use, exhibition or other means
- *P* document published prior to the International filing date but later than the priority date claimed

- *T* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the International search

22 March 2005

Date of mailing of the international search report

31/03/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

De Ceulaer, B

INTERNATIONAL SEARCH REPORT

IB 03/05698

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	OINRU QIU ET AL: "Dynamic power management in a mobile multimedia system with guaranteed quality-of-service" PROCEEDINGS OF THE 38TH. ANNUAL DESIGN AUTOMATION CONFERENCE. (DAC). LAS VEGAS, NV, JUNE 18 - 22, 2001, PROCEEDINGS OF THE DESIGN AUTOMATION CONFERENCE, NEW YORK, NY : ACM, US, vol. CONF. 38, 18 June 2001 (2001-06-18), pages 834-839, XP010552500 ISBN: 1-58113-297-2 page 834, right-hand column, lines 27-35 page 835, left-hand column, lines 28-33 page 835, right-hand column, lines 28-32 page 837, left-hand column, lines 18-23 page 837, left-hand column, lines 34-36 figure 2 -----	1

INTERNATIONAL SEARCH REPORT

IB 03/05698

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 2002045961	A1	18-04-2002		NONE
US 5953746	A	14-09-1999	US AU WO	5915265 A 6636896 A 9723830 A1 22-06-1999 17-07-1997 03-07-1997